REMARKS

This response responds to the Office Action dated August 6, 2003 in which the Examiner rejected claims 1-2 under 35 U.S.C. §102(b).

Claim 1 claims a method for manufacturing a ceramic oscillator, comprising the steps of; first, performing polarization processing for a mother substrate. Next, electrodes are formed on the mother substrate in discrete ceramic oscillator units. The mother substrate is then cut into discrete ceramic oscillator units, thereby obtaining discrete ceramic oscillators. The step of performing polarization processing for the mother substrate comprises finishing the application of a high DC voltage when the antiresonant frequency f_a of the mother substrate in a thickness vibration mode is measured while the voltage is applied to the mother substrate, and the antiresonant frequency f_a which is being measured has reached a target value which is the antiresonant frequency of the mother substrate during polarization corresponding to a target oscillation frequency of the ceramic oscillator as a finished product.

Through the method of the claimed invention performing a polarization processing for a mother substrate by finishing application of a high DC voltage when a measured anti-resonant frequency of the mother substrate reaches a target value, as claimed in claim 1, the claimed invention provides a method of manufacturing a ceramic oscillator in which the oscillation frequency is controlled with high accuracy while having a low cost. The prior art does not show, teach or suggest performing polarization processing for a mother

substrate by finishing the application of a high DC voltage when a measured antiresonant frequency of the mother substrate reaches a target value as claimed in claim 1.

Claims 1-2 were rejected under 35 U.S.C. §102(b) as being anticipated by *Unami* (U.S. Patent No. 5,912,600).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §102(b). The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

Unami appears to disclose piezoelectric resonator which maximizes the effective use of the mechanical resonance of a piezoelectric member. (col. 1, lines 10-12) A preferred method for manufacturing the piezoelectric resonator 10 will be described next. A plurality of mother boards 30 preferably made from piezoelectric ceramic is prepared. On one main surface of each mother board 30, as shown in FIG. 4, electrodes 32 made from, for example, silver and palladium, are formed. Then, the plurality of mother boards 30 are laminated to complete a laminated member. Electrodes 32 are preferably not formed on the mother board 30 at a top surface thereof. The laminated member is cut along a line shown by short dashes shown in FIG. 4. Then, the insulating films 16 and 18 and the external electrodes 20 and 22 are formed on the mother board 30 to complete the piezoelectric resonator 10. The mother boards 30 correspond to the piezoelectric layers 12a and the electrodes 32 correspond to the electrodes 14. (col. 7, lines 9-23) The piezoelectric resonator 10 uses the external electrodes 20 and 22 as input and output electrodes.

Piezoelectric layers 12a excluding the piezoelectric layers 12a disposed at both ends of the base member 12 are preferably piezoelectrically active because an electric field is applied between adjacent layers of the electrodes 14 by applying a signal to the external electrodes 20 and 22. Since voltages are applied in opposite directions to the piezoelectric layers 12a polarized in opposite directions in the base member 12, the piezoelectric layers 12a expand and contract as an integral unit in the same direction. In other words, an AC electric field in the longitudinal direction of the base member 12 is applied to each piezoelectric layer 12a by use of the electrodes 14 connected to the external electrodes 20 and 22, and a driving force for expansion and contraction is generated in each piezoelectric layer. Therefore, the entire piezoelectric resonator 10 as a whole vibrates in the longitudinal direction in a basic mode with the center of the base member 12 serving as a node. In the piezoelectric resonator 10, the polarization direction of the piezoelectric layer 12a, the applied electric field direction resulting from an input signal, and the direction of vibration in the piezoelectric layer 12a are all the same. In other words, the piezoelectric resonator 10 is of stiffened type resonator. (col. 7, line 59 through col. 8, line 18)

Thus, *Unami* merely discloses how to manufacture a piezoelectric resonator 10. However, nothing in *Unami* shows, teaches or suggests how to perform a polarization process on the mother board 30 (i.e. the piezoelectric layers 12a). In particular, nothing in *Unami* shows, teaches or suggests performing polarization processing for the mother substrate by finishing the application of a high DC voltage when a measured antiresonant frequency of the mother substrate reaches a target value as claimed in claim 1. Rather,

Unami merely discloses how to manufacture a piezoelectric resonator 10 (column 7 lines 9-23) and how the piezoelectric resonator operates (column 7 line 59 through column 8 line 18, column 9 lines 42 through column 10 line 23).

Since nothing in *Unami* shows, teaches or suggests performing polarization processing for a mother substrate by finishing the application of a high DC voltage when a measured antiresonant frequency of the mother substrate reaches a target value, as claimed in claim 1, Applicants respectfully request the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §102(b).

Claim 2 depends from claim 1 and recites additional features. Applicants respectfully submit that claim 2 is not anticipated by *Unami* within the meaning of 35 U.S.C. §102(b) at least for the reasons as set forth above and since nothing in *Unami* shows, teaches or suggests that the target value of the antiresonant frequency of the mother board during polarization is determined from correlated data which includes first correlated data exhibiting the correlation between the oscillation frequency of the ceramic oscillator which is ultimately obtained and the antiresonant frequency of the mother substrate at room temperature and a second correlation data exhibiting the correlation between the antiresonant frequency of the mother substrate at room temperature and the antiresonant frequency of the mother substrate during polarization. Applicants respectfully point out that *Unami* at column 10 lines 13-29 merely discloses how to adjust the capacitance of the resonator by changing the overlapping or common areas of the electrodes. Therefore,

Applicants respectfully request the Examiner withdraws the rejection to claim 2 under 35 U.S.C. §102(b).

The prior art of record, which is not relied upon, is acknowledged. The references taken singularly or in combination do not anticipate or make obvious the claimed invention.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason Examiner feels that the application is not now in condition for allowance, applicants respectfully request that the Examiner contacts, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

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